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Life and Microgravity Sciences on board ISS and beyond (Part I) (6)

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BAKE IN SPACE: TECHNOLOGY DEMONSTRATION

Abstract

The objective of Bake in Space is to recreate the complete production cycle of bread making – from grain production to making freshly baked bread that is suitable for the unique environment of spacecraft in microgravity. The idea is to use this endeavour as a stepping-stone to provide fresh food that will benefit the wellness and general quality of life of those living and working in space.

In order to achieve our main objective we have established a series of milestones that we intend to implement on the International Space Station as a series of technology demonstrations.:

1. Establishing baking infrastructure and testing it with pre-baked bread rolls
2. Experiment with other forms of dough creation (earth supply) i.e. granulate then bake dough for bread rolls
3. Prepare dough from flour (earth supply) + water (recycled from ISS) then bake dough for bread rolls
4. Grind corn, prepare dough in microgravity and bake for bread rolls
5. Grow corn for bread/ bread rolls

Each of the above steps is challenged by the unique environment of the International Space Station. There are a number of constraints to take into account such as dust, heat and moisture control as well as yeast behaviour in microgravity. This in turn will lead to the development of new hardware items and food preparation processes as well as innovative new food products for use in space and on Earth.

Bake in Space is leveraging the business opportunities afforded by the commercialisation of the ISS and is contributing directly to NASA and ESA's goals for the long-term exploration efforts of humankind.

This presentation will address some of the technical challenges that are to be overcome with the project.